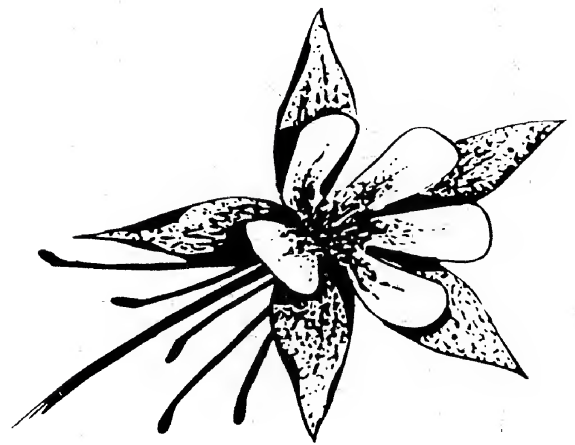


Aquilegia



Newsletter of the Colorado Native Plant Society

"... dedicated to the appreciation and conservation of the Colorado native flora"

Volume 24 Number 5

November—December 2000

Generic Changes to the Scrophulariaceae affect the Rocky Mountain Flora

Dr. Neil Snow, Biological Sciences, University of Northern Colorado

A considerable number of generic transfers from the Scrophulariaceae (figwort family) to the Orobanchaceae (broomrape family) and Plantaginaceae (plantain family) are now well supported by new research. Herein, I provide an overview of the current philosophy underlying classification and the advent of molecular sources of data in systematics, both of which are significantly affecting the taxonomy of one of Colorado's more prominent plant families.

Classification. The goal of modern taxonomy is to group organisms in such a way that the classification reflects evolutionary history. The prevailing taxonomic school of thought among professional taxonomists is "Phylogenetic Systematics," or simply "Phylogenetics." This philosophy was first developed in detail by the late German entomologist Willi Hennig. Although the initial embrace of phylogenetics was slow and considerable debate ensued over its relative merits, phylogenetic systematics is now firmly established as the most scientific approach to classification. Phylogenetic classification has two over-riding principles.

The first is that taxa are grouped together only by evolutionarily derived characters (traits) that are shared by two or more species. For example, the presence of flowers cannot be used to help classify members of the genus *Castilleja* within the paintbrushes. This is because all angiosperms have flowers, and flowers therefore are not a derived character among members of *Castilleja*. However, the presence of flowers is a derived character relative to all ferns, which reproduce only by spores. In this simple example, then, the presence of flowers could be used to group together species of *Castilleja* relative to ferns, since flowers are evolutionarily derived relative to spores. The word systematists use for a shared derived character is "synapomorphy" (pronounced sin-AP-oh-morf-ee). In contrast, an ancestral trait is a "symplesiomorphy" (sim-PLEASE-ee-oh-morf-ee). These terms should be learned by those interested in the more technical aspects of taxonomy, since they are used regularly by taxonomists. In contrast, "advanced" (for derived) and "primitive" (for ancestral) are falling out of favor, particularly since "advanced" has a historical tendency to

incorrectly imply some kind of progress.

The second principle of phylogenetics is that only monophyletic (mo-no-fy-LEH-tik) groups should be given taxonomic names. A monophyletic group is one that includes an ancestral taxon and all (not just some) of its descendant taxa. In the past, taxonomic names have been given to groups that are not monophyletic. One example is Class Reptilia. Zoologists historically excluded birds from Reptilia, which instead were placed in their own Class Aves. However, since birds are also descended from the common ancestor of other reptiles, it is incorrect under phylogenetic systematics to recognize Reptilia, without also including the birds. Stated another way, Class Reptilia becomes monophyletic if the birds are included — this is the preferred phylogenetic classification.

... systematics is a science and must reflect well-supported data

Molecular data. Soon after the rise of phylogenetic systematics, use of molecular data expanded rapidly. Certain characteristics of DNA found in the nucleus, mitochondria, and chloroplasts can be used as taxonomic markers to assist in the process of classification, although mitochondrial DNA is used primarily for animal classifications.

Molecular data have enabled some previous taxonomic questions to be answered satisfactorily. One example bears on relationships to the grass family. A number of candidate families had been proposed as being most closely related to the Poaceae. But none had

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been shown convincingly as more closely related than others using traditional sources of data, such as morphology, anatomy, and chromosomal data. A molecular study published several years ago demonstrated convincingly that the Joinvilleaceae, which consists of only one or two species widely scattered in the Pacific region, is the sister family to the species-rich and ecologically dominant grasses.



Changes to the Scrophulariaceae.

Historically, the Scrophulariaceae has been recognized as consisting of some 220 genera, which are particularly common in temperate and tropical mountains. Genera such as *Castilleja*, *Mimulus*, *Pedicularis*, *Veronica*, and several others are prominent in our area. *Penstemon* even has its center of diversity in the

mountainous areas of the western United States. However, the Scrophulariaceae was not monophyletic in its previous classification. It probably comes as a surprise to many CoNPS members that recent research has convincingly indicated the need to transfer most genera comprising the Scrophulariaceae elsewhere.

In 1999, Drs. Walter Judd, Christopher S. Campbell, Elizabeth A. Kellogg, and Peter F. Stevens published *Plant Systematics: A Phylogenetic Approach* (Sinauer Associates, Inc.), which reveals the following generic changes to the Scrophulariaceae. This book is highly recommended for those interested in more details about phylogenetics and the importance of molecular data, as well as the specific reasons for these changes to the Scrophulariaceae. My thanks to Dr. Richard Olmstead (University of Washington) and Dr. Judd (University of Florida) for sharing information on this recent classification.

Analysis of both molecular and non-molecular data suggests that the following genera found in Colorado formerly included in the Scrophulariaceae should be placed as follows:

Scrophulariaceae: *Verbascum* and *Scrophularia*. In its newer and more restricted sense, the family now includes only the genera containing non-sagittate anthers, in which the anther locules are confluent and open by a single distal slit.

Orobanchaceae: *Castilleja*, *Pedicularis*, *Agalinis*, *Orthocarpus*, and *Cordylanthus*. The Orobanchaceae in its newer sense includes the hemiparasitic genera formerly placed in the Scrophulariaceae.

Plantaginaceae: *Antirrhinum*, *Besseyia*, *Callitriche*, *Chionophila*, *Collinsia*, *Digitalis*, *Hippuris*, *Limosella*, *Linaria*, *Lindernia*, *Mimulus*, *Penstemon* (including *Leiostemon*), *Rhinanthus*, *Veronica* (including *Pocilla*), and *Veronicastrum*. The Plantaginaceae, thus, now includes the autotrophic "scrophs." The aquatic genera *Callitriche* and *Hippuris* are transfers from the Callitrichaceae and Hippuridaceae.

Other changes in classification based on phylogenetic analysis eventually will be made as more studies are published. For example, some data support the merging of the Aceraceae (maple family) into the Sapindaceae (soapberry family). Although none of the

existing floras recognize these groupings, future publications will recognize many of the newer concepts. Old habits, however, can be hard to break.

A number of years ago we tried to convince my Grandma Auer in upstate New York to try a peanut butter and jelly sandwich. She stated that humans are creatures of habit, and a lifelong habit of hers was to politely decline peanut butter and jelly when offered. Associating certain genera with particular families is also habitual for botanists. Some may therefore resist the generic reconfigurations of the Scrophulariaceae, Orobanchaceae, and Plantaginaceae.

However, systematics is a science and must reflect well-supported data. A more accurate understanding of phylogenetic relationships helps us better understand our floristic heritage. Names matter in some ways, but not in others. After all, the monkeyflower adorning the mountain stream near your feet during a lunch break still looks spiffy, irrespective of its family placement or whether your sandwich contains peanut butter and jelly.

WESTERN SLOPE WORKSHOPS ANNOUNCED

Gay Austin, Plateau Chapter

For 17 seasons, CoNPS workshops have brought native plant lovers together with a well-informed instructor. The opportunity to receive one-on-one instruction and informative lectures has made the workshop series one of the most popular Society programs. This season, the Plateau Chapter of the Colorado Native Plant Society is proud to announce several workshops to be conducted on the Western Slope. Attendees need only a love of plants and a desire to learn about them. To register for Western Slope workshops or for more information, please contact Gay Austin at home (970) 641-6264 or work (970) 642-4406.

How to Know the Families of the Western Slope

Leader: Dr. Robin Bingham

Location: Delta

Date: January 27, 2001

Dr. Robin Bingham, Botanist at Western State College, has geared this workshop toward the beginner botanist or the member who would like to review. As such, this workshop will focus on how to recognize the major plant families on the Western Slope. Dr. Bingham will also discuss basic terms for plant identification and how to tell monocots from dicots. Please contact Gay Austin at home (970) 641-6264 for workshop registration, which is \$12.

Grasses of the Western Slope

Leader: Dr. David L. Buckner

Location: Delta or Grand Junction

Date: March 17, 2001

Dr. Buckner, Consultant in Plant Ecology, Revegetation, and Restoration with ESCO Associates, will lead a basic grass identification class emphasizing grasses of the Western Slope. Tribe characteristics, specifically, will be covered in this workshop, which will be geared toward both beginners and advanced members. Microscopes and specimens will be available. Please contact Gay Austin at home (970) 641-6264 for workshop registration, which is \$12.

SOCIETY NEWS AND ANNOUNCEMENTS

Minutes of the CoNPS Board Meetings

Alice Guthrie, CoNPS Secretary

September 22, 2000

Treasurer's Report: Denise Culver distributed the budget report year-to-date, as well as the profit and loss statement. Denise also reviewed chapter subventions, calculated as 25 percent of membership dues for each chapter member.

Committee reports: Chairs Bob Clarke (Conservation), Sue Martin (Membership), and Rick Brune (Field Trips) are stepping down, with Velma Richards (Publications) cutting back on her responsibilities. Eric Lane will take over as Chair of **Membership**, while Jeff Dawson will chair **Publications**, working with Velma. The Chair of **Publicity** is still vacant and the status of the **Field Studies** Committee is under discussion. Leo Bruederle of the **Newsletter** Committee reported that there will be five regular issues of *Aquilegia* in 2000, with the possibility of a special issue comprising an article entitled "Soil Lichens and their Application as Ecological Indicators in Sagebrush Habitats" contributed by Roger Rosentreter.

New Business: The Rare Plant Book Fund was renamed the **Myrna P. Steinkamp Memorial Fund** and will be used similarly to the Marr Fund. Interest generated from the principle will be dedicated to the protection of Colorado rare plants, as well as research advancing our knowledge of these plants. The Board voted to split

Communications into two committees, one overseeing *Aquilegia* publication and a second overseeing the CoNPS website. Leo Bruederle will serve as Chair of the Newsletter Committee, while Bob Clarke will chair the Web Site Committee primarily overseeing content. Sara Hill, who was commended for her work as webmaster, will remain in that position. Jill Handwerk proposed a cooperative effort with Colorado State University to bring Dr. Gary Nabhan (Director, The Center for Sustainable Environments, University of Northern Arizona) to Fort Collins in order to deliver a **CSU Provost Lecture on Environmental Achievement**. The Board approved allocating \$500 toward an honorarium for Dr. Nabhan, who would also conduct a Society workshop, date and time to be announced. In a discussion of the definition of the term **native**, as in **native plant**, the Board agreed to temporarily accept the following from the Oxford Dictionary. "Applied to a species that occurs naturally in an area and therefore one that has not been introduced by humans either accidentally or intentionally. Of plants found in a particular place, the term is applied to those species that occur naturally in the region and at the site." Gay Austin will revise this definition based on the ensuing discussion. Peggy Lyon presented **Funding Guidelines for Ad Hoc Requests**, which was approved. The Board subsequently approved a request for \$500 from City of Boulder Open Space for revising and reprinting the **Russian olive brochure**, on which the Society will be acknowledged. Lisa Tasker announced the **Ecological Restoration Conference** being sponsored by the Central Rockies Chapter of the Society for Ecological Restoration, for which Lisa hopes the Board will consider lending support.

September 23, 2000

New Business: Officers Jill Handwerk (President), Dave Anderson (Vice President), Denise Culver (Treasurer), and Alice Guthrie (Secretary) were approved by the Board, with the next meeting scheduled for November 4, 2000 in Longmont Public Safety Building, Conference Room, 225 Kimbark.

Help!

The Board is requesting your help with the following:

Donation of a folding table, 5-6 feet long, for Society displays. Please contact Alice Guthrie at (303) 651-3127.

Volunteer opportunities:

ProGreen Show in Denver, January 2-5, 2001. Volunteers are needed to set up and staff the booth for either a half day or whole day. Contact Jill Handwerk at (970) 491-5857.

Committee Chairs (and members) are needed for the following committees: Conservation, Field Trips, Legislative, Affairs, and Publicity. Contact Jill Handwerk at (970) 491-5857 or Alice Guthrie at (303) 651-3127 for information and to volunteer.

Book review: *Aquilegia* is soliciting a review of *The Landscaping Revolution: Garden with Mother Nature, Not Against Her* by Andy and Sally Wasowski. Receive a free copy in return for a 500-1000 word review. Contact Leo P. Bruederle at (303) 861-4119 or lbrueder@earthlink.net for information.

Information needed: We would like to compile a list of fairs and shows at which to educate the public about CoNPS. If you know of local or county shows that would be appropriate, please call Alice Guthrie (303-651-3127) with the name, contact information, and general dates of the venue.

AQUILEGIA Deadline Approaches

Submit on or before December 1, 2000

Please submit contributions for Vol. 25 No. 1 of *Aquilegia* on or before December 1, 2000. Include author's name and address, and follow the format from previous issues of *Aquilegia* as closely as possible. Previously published articles submitted for reprinting require permission from the editor of original publication. Articles submitted via e-mail or on disks — MAC preferably, or IBM — are much appreciated. Please submit the contribution as a MS Word or RTF (rich text format) document.

The Importance of Native and Invasive Species in Land Management Society of Range Management Annual Meeting November 30 - December 1, 2000

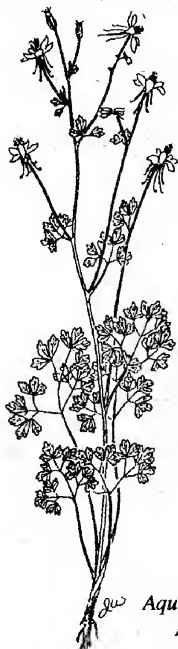
The Society for Range Management, USDA Forest Service, BLM, Chaffee County, Colorado Seed Growers Association, and Pawnee Buttes Seed are putting on a workshop in Fort Collins on invasive species and the use of native plants in revegetation. For more information, please contact Don Hajar at (970) 356-7002.

SOCIETY NEWS

Request For Proposals

The John W. Marr Fund

On March 24, 1990, the Board of Directors of the Colorado Native Plant Society established the John W. Marr Fund for the award of small grants in support of research in plant biology. The Fund honors the late Dr. John Marr, Professor at the University of Colorado and the first President of the Colorado Native Plant Society. The Fund was established to encourage, through the provision of small grants-in-aid, research on the biology and natural history of Colorado native plants. Both field and laboratory studies are eligible for funding. Awards of \$500 or less are typical and may represent the sole support of a project, may be part of joint funding agreed upon with other granting organizations, or may be used to supplement other funding obtained by the investigator(s).



Aquilegia chrysantha
Artist: Jan Wingate

Myrna P. Steinkamp Memorial Fund

On September 22, 2000, the Board of Directors renamed the Rare Plant Book Fund to honor Dr. Myrna P. Steinkamp. Myrna was a founding member of the Society, and served many years both as Treasurer and Chair of the Membership Committee. She also served on the Conservation Committee, helping to establish the Society's role in Colorado plant conservation and public lands planning. She participated actively in the preparation of both editions of the Society's publication *Rare Plants of Colorado*. Although this fund had been specifically designated for publication of *Rare Plants of Colorado*, the scope of the fund has now been broadened to include support for research on rare Colorado native plants, through the provision of small grants-in-aid. Both field and laboratory studies are eligible for funding. Awards of \$500 or less are expected and may represent the sole support of a project, may be part of joint funding agreed upon with other granting organizations, or may be used to supplement other funding obtained by the investigator(s) for research in Colorado. Contributions to the memorial fund may be made to:

Myrna P. Steinkamp Memorial Fund
c/o Colorado Native Plant Society
P. O. Box 200
Fort Collins, CO 80522

The Board of Directors is now soliciting proposals for both the Marr Fund and Steinkamp Memorial fund, for which the deadlines are January 15, 2001. Information on guidelines and requirements for proposals may be obtained by contacting Board member Eric Lane at (303) 239-4182.

CeRSER Ecological Restoration Conference April 26-27, 2001

The Central Rockies Chapter of the Society for Ecological Restoration announces a very exciting regional conference: **"Restoring the Rockies: Restoration and Conservation Strategies in the West,"** to be held on Thursday and Friday, April 26th and 27th, 2001 in Keystone, Colorado. With multiple organizations throughout the Rockies now practicing restoration within a diversity of ecosystems, a meeting to exchange strategies and bring together a wide variety of individuals, groups, and coalitions should be of service to all. In addition to exchange of ideas, the hope is that the conference will also help organizations form alliances so as to better ensure the long-term survival of our diverse historical ecosystems within the Rocky Mountain Region.

Keystone Resort is only 75 miles from Denver and more conveniently located than the Front Range for folks coming from west of the continental divide. The resort claims the largest, most versatile meeting facilities in Colorado to say nothing of the surroundings and recreational activities. Rates should be very reasonable, as late April is low season for Keystone. Don't miss this exciting opportunity to find out more about the practice of ecological restoration in your local ecosystems and how it relates to the bigger goal of conserving our native plant communities.

Submitting a Paper or Poster.

A call for papers is in progress. Abstracts and posters pertaining to all areas of restoration are currently being accepted. Emphasis will be placed on riparian and wetland areas, rangeland restoration, restoration on private lands, restoration education (e.g., schoolyard habitats), restoration in rights-of-ways, and urban restoration. Proposals are welcome from all disciplines, backgrounds, and experience levels. Presentations should be designed to be 20 minutes long, with an additional five minutes for question and answers. Longer time slots (up to 30 minutes) may be available if space permits. Please make the necessary arrangements if your presentation does not fit the allotted 20 minutes. Due to the anticipated diversity of the audience, papers should include a brief background. For poster presentations, presenters must provide their own free-standing bulletin boards. **Abstracts and proposals** should begin with the name and organizational affiliation of each author with the presenting author's name underlined. Also include the address, phone and e-mail (if available) of the corresponding author, followed by a descriptive title and a text summary not exceeding 300 words. **Submission deadline is December 1, 2000**, although proposals may be accepted beyond that date on a space available basis. Electronic submissions as MS Word documents or Rich Text Files (rtf) are preferred and should be submitted to Jody Nelson at nelsonj@exponent.com. If electronic submission is not possible, hard copy or disk should be mailed to:

Central Rockies Chapter of the Society for Ecological Restoration
P.O. Box 17644
Boulder, Colorado 80304-0644

For the most up to date information, please send e-mail to lisa-tasker@earthlink.net. Find a link to the Central Rockies Chapter through the international SER website www.ser.org.

MARR FUND: Reports from Recipients

Floristic Survey of South Central Colorado

Brian Elliott

During 1998 and 1999, an intense floristic survey was performed in south central Colorado. This study, supported in part by the John Marr Fund of the Colorado Native Plant Society, is the focus of my Master's Thesis at the University of Wyoming. Fieldwork is now complete and has resulted in over 20,000 numbered collections, with detailed location and ecological data for each. A set of specimens will be retained at the Rocky Mountain Herbarium, with duplicates going to other public herbaria.

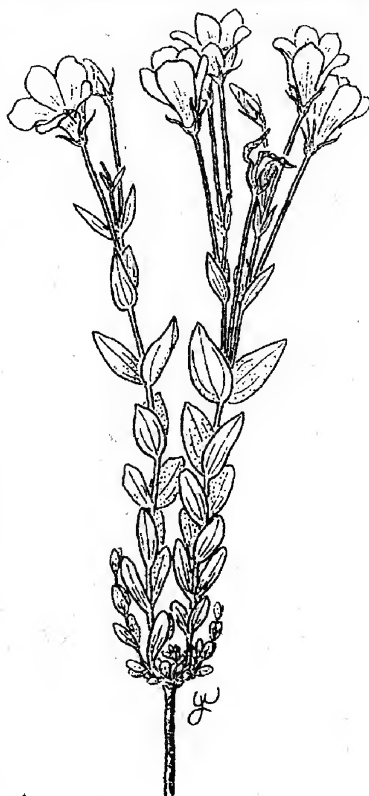
The study area includes the Wet Mountains, Sangre de Cristo Range, Culebra Range, Spanish Peaks, and surrounding areas. Ranging from the edge of Colorado's eastern plains up to an extensive alpine zone, the region encompasses over 5,000 square miles, with a rich diversity of vegetation types. The area has received relatively little attention from botanists previously and is hardly mentioned in Weber and Wittman's *Colorado Flora: Eastern Slope*.

The survey documented approximately 1150 taxa. This includes 44 taxa from the Colorado Natural Heritage Program's list of species of special concern. Notable collections include dwarf milkweed (*Asclepias uncialis*), Colorado larkspur (*Delphinium alpestre*), Gray's Peak whitlowgrass (*Draba grayana*), Smith whitlowgrass (*s. smithii*), showy prairie Gentian (*Eustoma grandiflorum*), spiny Aster (*Herrickia horrida*), 12 populations of rock-loving Neoparrya (*Neoparrya lithophila*), alpine poppy (*Papaver radicum* ssp. *kluanensis*), pictureleaf wintergreen (*Pyrola picta*), and Altai stitchwort (*Stellaria irrigua*). Also collected were *Cymopterus constancei*, newly described by Dr. Ron Hartman in *Brittonia*, and the soon to be published *Oenopsis puebloensis*.

This study is only part of a larger Flora of the Rocky Mountains Project being conducted by Dr. Hartman, Curator of the Rocky Mountain Herbarium at the University of Wyoming (<http://www.rmh.uwyo.edu>). Many thanks are due to the Colorado Native Plant Society (and especially to the supporters of the John Marr Fund), as well as to Nancy Ryke of the San Isabel National Forest for generously supporting this research.

Eustoma grandiflorum

Artist: Jan Wingate



Status of the Green Sedge in Colorado

Shannon Kuchel

Carex viridula Michx. (Cyperaceae), the green sedge, is a short-lived, graminoid perennial with a densely caespitose habit. It is monoecious, with a single terminal staminate spike and several sessile pistillate spikes. It typically occupies moist, early successional sites characterized by fluctuating and unpredictable water levels. These sites vary from calcareous, acidic, sandy, or organic shorelines; runnels in limestone barriers; wet meadows; marshes; on borders of streams, ponds, and lakes; to fens. *Carex viridula* is distributed throughout northern and central North America. It also extends to the southern Rocky Mountain region in several disjunct sites, including alpine wetlands in Colorado, where it is rare. Although *C. viridula* has been assigned a global ranking of G5, indicating that it is demonstrably secure globally, it has received a state ranking of S1, indicating that it is critically imperiled in Colorado. The purpose of this research was to describe genetic diversity in populations of *C. viridula* from Colorado, and determine if these populations exhibited reduced genetic diversity when compared to other populations of this species from North America and Europe.

In order to quantify genetic diversity, small samples of leaf tissue were collected from 350 individuals representing seven extant populations of *C. viridula* in Colorado and 179 individuals representing eight populations from elsewhere throughout the range of this species in North America. Starch gel electrophoresis of soluble enzymatic proteins coupled with substrate specific staining was used to determine the amount and distribution of genetic variation in these populations. These data were compared with data previously reported for European populations of this species.

Using these techniques, no genetic variation, either within or among populations from Colorado or elsewhere in North America, was detected. However, North American populations were genetically differentiated from European populations, with significantly more diversity maintained by the latter. The surprising lack of genetic diversity in North American populations is probably the combined result of high levels of selfing and inbreeding, restricted ecological amplitude, and genetic drift. Genetic bottlenecks are presumed to have occurred as a result of climate changes associated with Pleistocene glaciation or founding events associated with colonization of North America by proposed ancestral European populations.

I would like to thank Dr. Leo P. Bruederle for his guidance throughout this project. I am also grateful for support from the Colorado Native Plant Society, Sigma Xi, and the Department of Biology at the University of Colorado at Denver.



Carex viridula

Artist: Jan Wingate

CHAPTER NEWS

Boulder Chapter

Monthly meetings are held October through April at the Foothills Nature Center, located in Boulder at 4201 North Broadway, opposite its intersection with Sumac Ave. The Chapter now meets on the second Wednesday of each month, at 7:00 PM for business, a speaker, book sales, and socializing with refreshments. Please join us at 5:00 PM for supper with our speaker at Efrain's Mexican Restaurant, 1630 N. 63rd St, just north of Arapahoe in Boulder. For more information, contact Chapter President Caryl Shields at (303) 665-6312 or Program Chair Carolyn Crawford (303) 665-6903.

November 8, 7:00 PM

Weed Warrioring and other Botanical Exploits at Dinosaur National Monument
Tamara Naumann (Botanist, Dinosaur National Monument) will present some of her experiences over the last several years at the Monument, including those dealing with weeds, rare plants, tourists, and ranchers.

December 13, 7:00 PM

The World of Wildland Fires, Prescribed Burns, and Fire Ecology
Colorado just experienced one of its worst years for wildland (forest, brush, and range) fires. **Justin Dombrowski** (Fire Management Officer, Boulder Fire Department) is involved in many facets of wildland fire management throughout the fire season and across the State. He will discuss his experiences during the past year.

January 10, 7:00 PM

The Rocky Mountain Arsenal

The Rocky Mountain Arsenal was formerly involved in weapons work during the Cold War. Since being decommissioned, much of the area has been restored as a wildlife refuge. **Suzanne O'Neill** (President and Director, Rocky Mountain Arsenal Wildlife Society) will discuss the changes that have occurred over the years and the future of the site.

Fort Collins Chapter

Indoor monthly meetings are scheduled through April at 7:00 PM in the Main Conference Room of the National Seed

Storage Laboratory (NSSL) on the campus of CSU. The NSSL is located just west of the railroad tracks, about one block north of Pitkin Street (enter on the west side of the building). For more information, contact Chapter President Don Hazlett at (970) 834-1493.

November 9, 7:00 PM

Weed Warrioring and other Botanical Exploits at Dinosaur National Monument
Tamara Naumann (Botanist, Dinosaur National Monument) will repeat her November 8 Boulder Chapter Program.

December 5, 7:00 PM

Vegetable Motor-oil for Colorado Vehicles
Duane Johnson (Professor of Agriculture, CSU) will discuss his extensive work with lesser known Colorado crops and plant products. He will also review information on the toxicity of BT corn pollen to native insects.

February 6, 7:00 PM

To be announced

Metro-Denver Chapter

Indoor monthly meetings are held at 7:30 PM from September through April in the Morrison Center at the Denver Botanic Garden. For more information, contact President Denise Larson at (303) 733-4338 or Leo P. Bruederle at (303) 861-4119 or by e-mail at lbruederle@earthlink.net.

October 31, 7:30 PM

Status of the Green Sedge in Colorado

The green sedge, *Carex viridula* (Cyperaceae), occurs in wetland habitats scattered throughout northern and central North America and Eurasia. Its distribution also extends to several disjunct sites in the alpine wetlands of Colorado, where it is critically imperiled. **Shannon Kuchel**, 1999 recipient of a John W. Marr Fund research grant, will discuss her research addressing genetic diversity maintained by Colorado populations of the green sedge.

December 5, 7:30 PM

Flora of the Rampart Range.

The Rampart Range is one of a number of distinct geologic features comprising the Front Range of the southern Rockies in Colorado. The vegetation of the Ramparts

is primarily montane, with both lower and upper montane forest well-represented. **Leo P. Bruederle** (Associate Professor, CU-Denver) will discuss ongoing research conducted along with CoNPS members Sara E. Hill and Kevin Fehlberg, the objective of which was to circumscribe the flora of the Rampart Range.

January 30, 7:30 PM

New Species in the Myrtle Family from the Rich Flora of Queensland, Australia
Queensland is mega-rich in its biodiversity, as evidenced by its 9,000 species of vascular plants. Many new species are described annually, particularly from the more tropical areas of the state. Recent research has focused on describing new species and taxonomically revising several genera of fleshy-fruited members of the Myrtle family (Myrtaceae). **Dr. Neil Snow** (Assistant Professor, UNC) will provide a broad overview of the Australian flora, with a particular focus on Queensland.

Plateau Chapter

Workshops, field trips, and other activities are scheduled throughout the year. For more information, please contact Chapter President Jeanne Wenger at (970) 256-9227 or by e-mail at Bluecrow2u@aol.com or Program Chair Lori Brummer at (970) 641-3561 or lbrummer@gunnison.com.

November 18, 10:30 AM

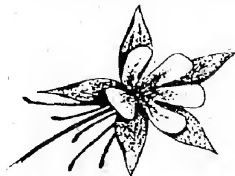
Plateau Chapter Annual Planning Meeting and Potluck

Please note this change in date!
Following our organizational meeting (workshops, field trips, and elections) and lunch, we'll have a seed and catalog exchange. Members will then have an opportunity to show off some of the great slides they took over the year. Dust your cameras off and buy some slide film! This should be fun! Meet at the Forest Service building in Delta.

Southwest Chapter

For Chapter news and activities, please contact Chapter President Sandy Friedley at (970) 884-9245 or by e-mail at friedley@frontier.net.

Colorado Native Plant Society



The Colorado Native Plant Society is a non-profit organization dedicated to the appreciation and conservation of the Colorado native flora. Membership is open to all with an interest in our native plants, and is composed of plant enthusiasts both professional and non-professional.

Please join us in helping to encourage interest in enjoying and protecting Colorado's native plants. The Society sponsors field trips, workshops, and other activities through local chapters and statewide. Contact the Society, a chapter representative, or committee chair for more information.

Schedule of Membership Fees

| | |
|-------------------------|-------|
| Life | \$250 |
| Supporting | \$50 |
| Organization | \$30 |
| Family or Dual | \$15 |
| Individual | \$12 |
| Student or Senior | \$8 |

Membership Renewal/Information

Please direct all membership applications, renewals, and address changes to the Membership Chairperson, Colorado Native Plant Society, P.O. Box 200, Fort Collins, CO 80522. Please direct all other inquiries regarding the Society to the Secretary at the same address.

Aquilegia

Aquilegia is published four to six times per year by the Colorado Native Plant Society. This newsletter is available to members of the Society and to others with an interest in native plants. Contact the Society for subscription information. Articles for *Aquilegia* may be used by other native plant societies or non-profit groups if fully cited to author and attributed to *Aquilegia*.

Please direct all contributions to the newsletter to:

Leo P. Bruederle
Biology, Campus Box 171
University of Colorado at Denver
P.O. Box 173364
Denver, CO 80217-3364
E-Mail: lbruederle@earthlink.net

Short items such as unusual information about a plant, a little known botanical term, etc., are especially welcome. Previously published articles submitted for reprinting require permission. Camera-ready line art or other illustrations are also solicited. Please include author's name and address, although anonymity may be requested. Articles submitted via e-mail or on disks (MAC preferably, or IBM) are appreciated. Please indicate word processing software and version; if possible, submit as an RTF (rich text format) file.

Officers

| | |
|-------------------|--------------------------------|
| President | Jill Handwerk .. 970-491-5857 |
| Vice-President .. | David Anderson .. 970-484-0774 |
| Secretary | Alice Guthrie .. 303-651-3127 |
| Treasurer | Denise Culver .. 970-225-1930 |

Board of Directors

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Chapter Presidents

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| Boulder | Caryl Shields .. | 303-665-6312 |
| Fort Collins .. | Don Hazlett .. | 970-834-1493 |
| Metro-Denver .. | Denise Larson .. | 303-733-4338 |
| Plateau | Jeanne Wenger .. | 970-256-9227 |
| Southwest | Sandy Friedley .. | 970-884-9245 |

Committees

| | | |
|-----------------------|----------------------|--------------|
| Conservation . . . | VACANT | |
| Education | Tina Jones | 303-794-2647 |
| | and Co-chair VACANT | |
| Field Studies . . . | Loraine Yeatts . . . | 303-279-3427 |
| Field Trips | VACANT | |
| Horticulture and. | Kathy Damas . . . | 303-543-1492 |
| Restoration . . . | and Lisa Tasker . . | 970-544-3633 |
| Legislative | | |
| Affairs | VACANT | |
| Membership. . . . | Eric Lane | 303-239-4182 |
| | and Sue Martin. . . | 970-226-3371 |
| Newsletter | Leo P. Bruederle. . | 303-556-3419 |
| Publications . . . | Jeff Dawson | 303-722-6758 |
| | and Velma Richards | 303-794-5432 |
| Publicity | VACANT | |
| Rare Plant | Eleanor | |
| Monograph . . . | Von Bargaen . . . | 303-756-1400 |
| Web Site | Bob Clarke. | 970-242-6067 |
| Workshops. . . . | Bill Jennings . . . | 303-666-8348 |

MEMBERSHIP APPLICATION FORM

Name(s) _____

Address _____

(Address) _____

City _____ State _____ Zip _____

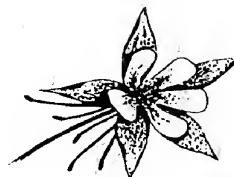
Phone () _____ E-mail _____

Chapter: ☐ Boulder ☐ Fort Collins ☐ Metro Denver ☐ Plateau ☐ Southwest

MEMBERSHIP CLASS (Select one)

- ☐ Individual, \$12.00
- ☐ Family/dual, \$15.00
- ☐ Senior/retired, \$8.00
- ☐ Student, \$8.00
- ☐ Corporate, \$30.00
- ☐ Supporting, \$50.00

In addition to my membership, I have included \$_____ as a contribution to the John Marr Fund (endowment in support of small grants-in-aid of research), \$_____ as a contribution to the Myrna P. Steinkamp Memorial Fund (endowment in support of small grants-in-aid of research), or \$_____ as a general contribution to the Society.



CONPS IS A NON-PROFIT ORGANIZATION -- DUES AND CONTRIBUTIONS ARE TAX-DEDUCTIBLE

CALENDAR

CHAPTER MEETINGS AND EVENTS

- Boulder Chapter**
- November 8 Weed Warrioring and other Botanical Exploits at Dinosaur Nat'l. Monument
- December 13 The World of Wildland Fires, Prescribed Burns, and Fire Ecology
- January 10 The Rocky Mountain Arsenal
- Fort Collins Chapter**
- November 9 Weed Warrioring and other Botanical Exploits at Dinosaur Nat'l. Monument
- December 5 Vegetable Motor-oil for Colorado Vehicles
- Metro-Denver Chapter**
- October 31 Status of the Green Sedge in Colorado
- December 5 Floristic Analysis of the Rampart Range
- January 30 New Species in the Myrtle Family from the Rich Flora of Queensland, Australia
- Plateau Chapter**
- November 18 Plateau Chapter Annual Planning Meeting and Potluck

Plateau Chapter (continued)

- January 27 Workshop: How to know the Families of the Western Slope
- March 17 Workshop: Grasses of the Western Slope

SOCIETY EVENTS

- Board Meetings**
- November 4 Longmont, Colorado
- Workshops**
- November 4, 5 How to Know the Families
First session: Saturday
Second session: Sunday
- December 9, 10 Small Plant Families
First session: Saturday
Second session: Sunday
- January 13, 14 Grasses: The Tribe Hordeae
First session: Saturday
Second session: Sunday
- February 10, 11 *Cirsium*: The Native Thistles
First session: Saturday
Second session: Sunday



Colorado Native Plant Society
P.O. Box 200
Fort Collins, Colorado 80522
<http://www.conps.org>

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